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ABSTRACT

This booklet is intended to help mainstreamed mentally retarded, emotionally disturbed, or learning disabled high school students acquire a basic understanding of the responsibilities and working conditions of cooks and to practice basic math skills necessary in the occupation. The first section provides a brief introduction to the occupation by focusing upon those job tasks of a cook with which the student is likely to be familiar. The next two sections deal with the work environment of the typical cook and the training, education, and experience needed for the occupation. Exercises addressing basic math skills used by cooks are provided. Various suggestions are listed for students interested in further exploring the occupation of cook. A glossary and answer sheet conclude the booklet. (MN)

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MATH on the job

Cook

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MATH ON THE JOB:

COOK

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MATH on the job

Cook

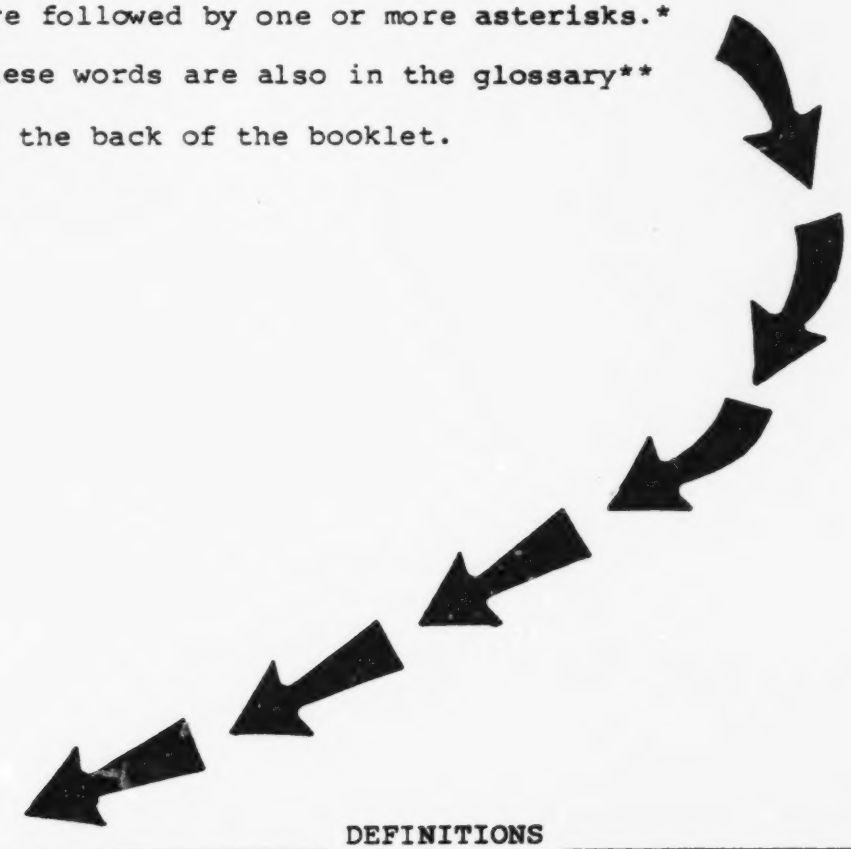
In this booklet, you can--

- find out what a cook does
- see how a cook uses math
- get a chance to use math as a cook
- find out the types of things a cook needs to know
- find out what courses, training, and experience you need to become a cook

SPECIAL WORDS USED IN THIS BOOKLET

Workers in many jobs use special words or special meanings for words. Learning these words helps you to learn about a job.

You will find some of these special words in this booklet. When these words, and some hard words, are used for the first time, they are followed by one or more **asterisks.*** These words are also in the **glossary**** at the back of the booklet.



DEFINITIONS

*An <u>asterisk</u> (*) is a symbol that tells you to look at the bottom of the page for the meaning, or definition, of the word.

**A <u>glossary</u> is a list of words with their meanings.

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HAVE YOU EVER...

- watched someone measure amounts of food?
- watched someone cooking a meal?
- decorated or frosted cakes or cookies?
- helped someone prepare a meal?
- gone shopping for food?

If you have, then you have some idea about the work that a cook does. This booklet will help you to learn about the work of a cook and how math is important to do the job.

WHAT DOES A COOK DO?

A cook's main task is to prepare food for customers. How do cooks do this? As a cook, you--

- plan meals and decide what food to include on a menu
- keep track of the amount of food on hand
- select the right **ingredients*** and **seasonings**** to prepare the food
- measure correct amounts of food
- prepare the food for cooking by cleaning, cutting, and mixing the ingredients
- cook or bake the food at the correct temperature
- put the correct amount of food on plates

DEFINITIONS

*Ingredients are the things you combine to make food. The ingredients of a tuna salad sandwich are tuna fish, mayonnaise, lettuce, and bread.

**Seasonings are flavorings, such as salt, that are used to improve the taste of food.

A cook uses math on the job every day. As a cook, you--

- count, add, subtract, multiply, and divide
- use whole numbers, fractions, and decimals
- use measuring cups, measuring spoons, scales, thermometers, and timers
- measure liquids, dry goods, time, and temperature
- increase recipe amounts to serve more people
- decrease recipe amounts to serve fewer people

A cook uses math to set the oven at the right cooking temperature.

EXAMPLE

The recipes you use will tell you at what temperature you should set the oven control. You must make sure that you follow the directions correctly. The recipe for chocolate cake tells you to set the oven control at 350°*. This oven control is set at 350°.

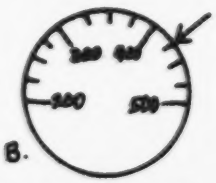
NOW YOU TRY IT

Practice Exercise A

1. At what temperature is the oven control set?

2. The recipe for chocolate chip cookies tells you to set the oven control at 375°. Which oven control is set correctly?

A.



B.

3. On a piece of paper draw an oven control gauge. Mark on the oven control a setting of 450°.

DEFINITION

*° is a symbol for degrees. Degrees are used to measure how hot or cold something is.

A cook uses math to determine how long to cook food.

EXAMPLE

Cooks must be able to tell time so they know when to stop cooking food. Look at the clock on the left. Assume that you put an apple pie in the oven at 3:10. The directions are that you should bake the pie at 350° for 45 minutes. The clock on the right shows the time you should take the pie out of the oven.

start baking pie

stop baking pie

NOW YOU TRY IT

Practice Exercise B

4. In the example above, what time should you take the pie out of the oven?

5. You are baking chocolate chip cookies. The directions say to bake the cookies for 10 minutes. If you put the cookies in the oven at 1:55, what time do you take them out of the oven?

For questions 6-10, assume that you cook a roast 30 minutes for each pound at 350°.

6. How long would you cook a four-pound roast?

7. If you put a 4-pound roast in the oven at 4:00, when would you take it out?

8. How long would you cook a 3-1/2 pound roast?

9. If you put a 3-1/2 pound roast in the oven at 11:20, when would you take it out?

10. At what time would you put an 8-pound roast in the oven if you wanted it done at 6:00?

A cook uses math to figure out how much meals cost.

EXAMPLE

Cooks add together the cost of ingredients to figure out the total cost of food. They find the cost of each serving by dividing the total cost by the number of servings.

INGREDIENTS OF SLOPPY JOE--(Serves 6)	COST
1 pound ground beef	$1.89
1/2 cup chopped onion	.71
3 tablespoons catsup	.08
1 can (10-1/2 ounces) condensed chicken gumbo soup	.67
6 hamburger buns	1.09
TOTAL	$4.44

$$\frac{\text{Total Cost}}{\text{Number of Servings}} = \frac{\$4.44}{6} = \$0.74$$

The cost of each serving is $0.74.

NOW YOU TRY IT

Practice Exercise C

INGREDIENTS OF SPAGHETTI--(Serves 24)	COST
6 medium onions	$ .99
8 cloves garlic	.89
1/4 cup olive oil	1.25
4 one-pound cans tomatoes	3.18
4 fifteen-ounce cans tomato sauce	1.18
3 tablespoons parsley flakes	.67
2 tablespoons sugar	.10
2 tablespoons salt	.08
1-1/2 tablespoons oregano	.20
4 pounds ground beef	6.76
2 pounds long spaghetti	1.64

11. What is the total cost of the spaghetti ingredients above?

12. What is the cost of each serving of spaghetti as listed above?

13. You have cooked a 28-pound ham. The whole ham cost $52.92. How much does each pound of ham cost?

14. If you serve each person 1/2 pound of a 28-pound ham that cost $52.92, how much does each serving of ham cost?

A cook uses math to increase and decrease recipes.

EXAMPLE

Recipes usually tell you how many people you can serve. Sometimes, you will want to serve more people. At other times, you will want to serve fewer people. You will need to adjust the recipe amounts to serve the correct number of people. Assume that you want to make hot chocolate for 6 people. Your recipe says you need 2 tablespoons of cocoa to serve 4 people. How much cocoa do you need for 6 people?

STEP 1 -- Divide the number of servings you want by the number of servings the recipe makes.

$$\frac{\text{Servings You Want}}{\text{Servings in Recipe}} = \frac{6}{4} = 1\text{-}1/2$$

STEP 2 -- Multiply the amount of each ingredient by the answer in Step 1.

2 tablespoons x 1-1/2 = 3 tablespoons

You need 3 tablespoons of cocoa for 6 people.

NOW YOU TRY IT

Practice Exercise D

INGREDIENTS FOR HOT CHOCOLATE--(Serves 4)
2 tablespoons of cocoa
3 tablespoons of sugar
1/8 teaspoon of salt
1/2 cup of hot water
2 cups of milk

15. How much sugar do you need to make hot chocolate for 6 people?
16. How much salt do you need to make hot chocolate for 6 people?
17. How much milk do you need to make hot chocolate for 12 people?
18. How much cocoa do you need to make hot chocolate for 12 people?
19. How much salt do you need to make hot chocolate for 2 people?
20. How much hot water do you need to make hot chocolate for 1 person?

WHERE DOES A COOK WORK?

A cook could work in many different places preparing and serving food. As a cook, you prepare and cook foods for others. You may work in--

- a restaurant
- a hotel
- a hospital
- a school
- a private club
- an employee's cafeteria within a large factory or business

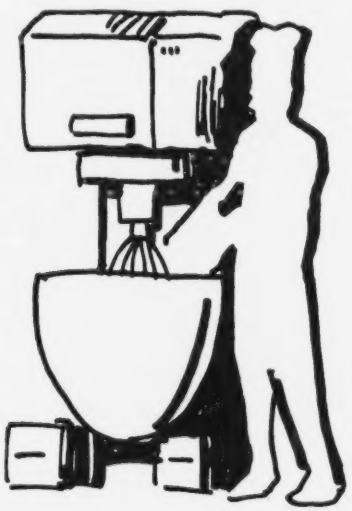
As a cook, you will work with other food service workers as a team to give customers good service. You may work under a head cook or food service manager. The manager--

- tells you your regular duties
- gives you special assignments
- helps you work out problems that you can't solve by yourself

A cook also works with customers. You may help a customer plan a dinner party or other special meal. You--

- tell the customer what food you can prepare
- tell the customer how much the meal will cost
- cook the meal the way the customer asks ("steak done medium rare")

A cook uses many types of equipment and utensils. As a cook, you use equipment made for preparing large amounts of food. For example, at home you may use a hand mixer or blender to mix cake batter for one cake. In a commercial kitchen, the blenders or mixers may hold enough batter for 50-100 cakes!



Other pieces of equipment and utensils you may use are--

- dishwashing machines
- knives and cleavers
- spoons and ladles
- measuring cups and spoons
- scales

There are many types of cook and cook helper jobs in kitchens. Some of the types of jobs are--

- cook helpers, who help cooks by bringing the correct utensils, cleaning and preparing meats and vegetables for cooking, lifting pots, pans, and trays, and cleaning up the kitchen.

- baker and pastry helpers, who help make bread, rolls, cakes, cookies, and pies. They bring the supplies and equipment and help mix batter or dough. They also clean up after themselves and the other workers.

- short-order cooks, who prepare foods that take a short time to make, such as hamburgers, sandwiches, and breakfast foods. They may work in smaller restaurants like diners, coffee shops, and snack bars.

- cooks, who prepare meals by deciding on ingredients, cooking or baking the food and putting the food on plates for the waiters or waitresses. Cooks also supervise the cook helpers and other kitchen workers.

- head cooks, who run the kitchen of larger restaurants. They decide what food will be served and what the other cooks and workers will do. They make sure the kitchen is clean and that the food is prepared correctly.

IF YOU ARE INTERESTED IN

THE WORK OF A COOK AND

WOULD LIKE TO KNOW MORE,

READ ON

WHAT TRAINING, EDUCATION, AND EXPERIENCE DO YOU NEED TO BECOME A COOK?

What kind of cook would you like to be? Where do you want to work? The answers to both of these questions can make a difference in the training, education, and expeience you need to become a cook.

You don't need much training to do the job of cook's helper or kitchen helper. Your boss will probably show you what to do and train you on the job. But you may be able to do a much better job if you know about food preparation from classes or from other jobs.

You may need some training or experience to become a short-order or fry cook. You can get this experience by working as a helper or by taking courses in food preparation.

To get a job as a cook, you need to know about food, food preparation, and how to keep food from spoiling. As a cook, you need to know--

- how to read directions in a recipe
- standard directions for food like cake
- nutrition, or how to combine foods to give people all the foods they need to stay healthy
- how foods act when they are mixed with other foods
- how to best clean, cut, and chop all kinds of food

- the foods that can be frozen, the foods that must be kept cold, and the foods that must be cooked carefully to keep them good
- health rules and safety skills

The best way to learn these things is to take courses at your high school, vocational education center, or a community college.

You may also learn to be a cook by going into an apprenticeship program. In these programs, you work on a job while being taught about being a cook. Apprenticeship programs may take up to 3 years, and you are paid for the work you do.

If you want to be a special cook, such as a baker, pastry cook, or head cook, you must have special training. You may also need to have experience in other cooking jobs. For a head cook job, you have to be able to supervise other people.

Once you've gotten a job in the food service industry, you can move up to a better job by showing that you can do your job well. Taking every chance to learn new skills and tasks will help you move up. Showing that you have math skills will also help you.

DO YOU WANT TO DO MORE COOK'S MATH?

Practice Exercise E

21. You are cooking a 14-pound ham. The directions say to cook the ham 20 minutes for each pound at 375°. How long should you cook the ham?

22. If you put a 14-pound ham in the oven at 12:35 and cook the ham 20 minutes for each pound, what time should you take it out of the oven?

23. It will take 7 hours for a 24-pound turkey to cook. If you want the turkey to be done at 6:30 p.m., what time should you put it in the oven?

24. If you allow 3/4 pound for each serving, how many people will a 24-pound turkey serve?

Practice Exercise F

25. A 20-pound turkey costs $15.80. How much does each pound cost?

26. If you serve each person 3/4 pound of a 20-pound turkey that cost $45.80, how much does each serving cost? (Round the amount to the next highest cent).

27. You spent $19.20 to make 24 servings of lasagna. How much did each serving cost?

28. You spent $5.28 to make 2 dozen chocolate chip cookies. How much did each cookie cost?

Practice Exercise G

For problems 29-43, how much of each ingredient do you need?

	Food	Amount Needed to Serve One Person	Total Number of Servings Needed	Amount of Ingredient Needed
29.	Onions	1/3 cup	21	?
30.	Salad	1/4 head of lettuce	40	?
31.	Soup	1/2 cup	60	?
32.	Chicken	1/2 pound	15	?
33.	Beef	2/5 pound	100	?
34.	Salmon	1 steak	33	?
35.	Potato	1 whole	46	?
36.	Rice	1/2 cup	38	?
37.	Dinner roll	2 whole	38	?
38.	Green beans	1/2 cup	64	?
39.	Almonds	1/16 cup	80	?
40.	Spinach	1/2 cup	48	?
41.	Mushrooms	1/8 cup	8	?
42.	Corn	1/2 cup	21	?
43.	Peas	1/2 cup	33	?

Practice Exercise H

Use the recipe below to answer questions 44-48.

INGREDIENTS OF BROWNIES--(Serves 8)
3 1 oz. squares unsweetened chocolate
1 cup butter or margarine
4 eggs
2 cups sugar
1 cup flour
2 cups walnuts

44. How much butter do you need to make brownies for 16 people?
45. How much flour do you need to make brownies for 6 people?
46. How many cups of walnuts do you need to make brownies for 4 people?
47. How many eggs do you need to make brownies for 10 people?
48. How much unsweetened chocolate do you need to make brownies for 12 people?

DO YOU WANT TO EXPLORE SOME MORE?

1. A big part of a cook's job is measuring amounts of food. Ask your teacher or someone at home to show you how to measure using measuring cups and spoons. Practice measuring amounts of water, flour, or sand. Ask the person who does the cooking in your home if you can measure food prepared for a meal.

2. Look through magazines at home or in the library that have recipes and pictures of foods. Observe ways various foods are arranged to look attractive. Read recipes to discover the ingredients for some of the dishes. Write down the names of ingredients that are new to you. Look up the new words in the dictionary and write down their meanings.

3. Read a recipe book at home or in the library. Read the sections on nutrition, meal planning, and basic rules for food preparation.

4. Select a recipe to cook at home. Follow the recipe and serve the food to your family or friends. Ask the people you serve how they like the food.

5. Ask to visit your school cafeteria kitchen and talk to a cook. Take a list of questions you'd like to ask the cook about the job. For example, ask the cook to describe his or her work.

6. Are you interested in other jobs in food service?

   - Salad makers make salads by cleaning the vegetables and fruits, mixing the salads, and preparing the dressings. They put the salads in bowls or on plates.

   - Coffee makers make coffee, tea, and hot chocolate, and prepare cold drinks, such as iced tea, for waiters and waitresses to serve. They may also help prepare some food such as toast, eggs, and waffles.

   - Sandwich makers make sandwiches by slicing meats and bread, making fillings such as tuna salad, and putting sandwiches together.

- Cooks' helpers help cooks by washing, peeling, and cutting vegetables and fruits, stirring soups and sauces, and carrying pots, pans, and trays from place to place. Cooks' helpers also clean work areas, utensils, pots and pans, and even garbage cans.

- Fast food restaurant workers may take food orders, fill food orders, and prepare food such as french fries, hamburgers, and sandwiches. They also clean their working space and other parts of the restaurant.

You can do these jobs without all the math skills listed in this booklet, but you can do your work better if you do have math skills. Most of these workers have to weigh, measure, and count food items.

You also may get a chance to move up to a better job if you can show that you can do your work well. Part of doing your work well is doing the math needed on the job.

GLOSSARY

Asterisk (*): a mark that tells you to look at the bottom of the page for the meaning, or definition, of the word.

Degrees (°): a symbol for degrees. Degrees are used to measure how hot or cold something is.

Glossary: a list of words with their meanings.

Ingredients: foods and seasonings that are combined to make a food. For example, the ingredients of a tuna salad sandwich are tuna fish, mayonnaise, lettuce, and bread.

Seasonings: ingredients, such as salt, used to improve the taste of food; flavorings.

ANSWER SHEET

Practice Exercise A

1. 400°
2. A
3.

Practice Exercise B

4. 3:55
5. 2:05
6. 2 hours
7. 6:00
8. 1 hour 45 minutes
9. 1:05
10. 2:00

Practice Exercise C

11. $17.04
12. $0.71
13. $1.89
14. $0.95

Practice Exercise D

15. 4-1/2 tablespoons
16. 3/16 teaspoon
17. 8 cups
18. 6 tablespoons
19. 1/16 teaspoon
20. 1/8 cup

Practice Exercise E

21. 280 minutes or 4 hours 40 minutes
22. 5:15
23. 11:30 a.m.
24. 36

Practice Exercise F

25. $0.79
26. $0.53
27. $0.80
28. $0.11

Practice Exercise G

29. 7 cups
30. 10 heads
31. 30 cups
32. 7-1/2 pounds
33. 40 pounds
34. 33 steaks
35. 46 potatoes
36. 19 cups
37. 76 rolls
38. 32 cups
39. 5 cups
40. 24 cups
41. 1 cup
42. 10-1/2 cups
43. 16-1/2 cups

Practice Exercise H

44. 2 cups
45. 1-1/3 cup
46. 1 cup
47. 5 eggs
48. 4-1/2 squares